Why Alternative Fuels?

Nowhere in the world is the freedom of transportation valued as much as in the United States. However, our nation's growing dependence on oil imports threatens our national security, economic stability, and environment. Alternative fuels and energy efficiency enable us to maintain the same level of freedom without compromising our quality of life.

The United States spends more than $50 billion each year to import oil, accounting for more than 40% of our trade deficit. Ninety-seven percent of our total transportation energy comes from oil. Furthermore, U.S. oil consumption is growing while production levels are declining. At this time, the U.S. is over 50% dependent on imported oil.

Moreover, transportation use is the single largest (80%) contributor to air pollution in many cities. According to the American Lung Association, approximately $50 billion is spent each year on health care as a direct result of air pollution.

The U.S. Department of Energy is working to reduce oil imports through initiatives such as the Clean Cities and Clean Airports programs. Both programs utilize public/private partnerships to promote the establishment of alternative fuels and alternative fuel fleets in the United States.

Where do I get more information?

For more information on the Clean Airports Program, contact Grazia Zanin at Renewable Aviation Fuels Development Center, P.O. Box 97413, Baylor University, Waco, TX 76798 (1-817-755-3563) fax (1-817-755-3560). The Clean Cities website (http://www.ccities.doe.gov) and Hotline (1-800-CCITIES) can also provide answers to questions on the program, fuels, vehicles, and funding. The Hotline also provides several resources, including the *Clean Cities Funding Resources Guide*, the *Clean Cities Troubleshooting Guide*, *The Road to Clean Cities*, and the quarterly *Clean Cities Drive* newsletter.

Clean Airports

A GUIDE TO ESTABLISHING A CLEAN AIRPORTS PROGRAM IN YOUR COMMUNITY

Navigating Clean Airports

By introducing and encouraging the use of alternative fuel in aircraft, the U.S. Department of Energy/Baylor University Clean Airports program **actively reduces** the nation's energy security burden, improves the environment, and provides new economic opportunities for our country.

Airports are important centers for commercial activity, boosting local economies through employment and business opportunities. Airports are also a focal point of significant transportation fuel use, in a highly concentrated area. Recognizing the fact that by working with airports, additional progress can be made to promote a community's use of alternative fuels, the Department of Energy's Clean Cities program is targeting small, local airports to encourage and facilitate aircraft conversion to alternative fuels. This new initiative is called the Clean Airports program. It is based on the Department of Energy's successful Clean Cities program.

DOE Clean

Program Plans must state how Clean Airports plan to fulfill the following goals:

- The airport will serve as home base for at least one alternative fuel aircraft, or be used regularly by several alternative fuel aircraft.

- The airport will have refueling infrastructure for at least one type of alternative fuel aircraft.

- The airport will use alternative fuels in at least some of its ground vehicles (such as courtesy vans used by car rental businesses or hotels, tractors used for pulling baggage carts, and emergency response vehicles).

- The airport will establish a public awareness campaign about alternative fuels (such as a display or an education program).

Additionally, airports will be encouraged to incorporate energy efficient building technologies and renewable energy technologies.

(4) Draft and Sign a Memorandum of Understanding

The Program Plan is used to constitute a Memorandum of Understanding (MOU) between the coalition, its stakeholders, and the Department of Energy. The MOU describes the voluntary commitments made by the stakeholders to raise public awareness of alternative fuels and to cooperate with the administrative requirements of the national Clean Airports program.

Clean Airport Designation Process

The promotion of alternative fuels in the nation's airports can be accomplished in several ways. An airport can play an important role as a stakeholder in a nearby Clean Cities coalition. Or, an airport could advance Clean Cities objectives as a stand-alone coalition.

The Clean Cities partnership process has been adapted for airports pursuing designation as a Clean Airport. Airports that want to enter the program must follow a comprehensive commitment process:

(1) Appoint a *Clean Airports* Coordinator

The Coordinator should

a) Be a responsible local airport representative with ready access to key decision-makers, serve as leader for

b) Coordinate the coalition, and

c) Maintain close contact with the regional Department of Energy Support Office.

(2) Hold Stakeholder Meetings

Stakeholders are groups that have an interest in the local energy and transportation sector. Stakeholders may be fuel suppliers, fixed base operators, university aviation programs, flying clubs, local pilots, fleet managers, and existing Clean Cities stakeholders. Local stakeholders should be identified and invited to participate in Clean Airport planning meetings.

(3) Develop a Program Plan

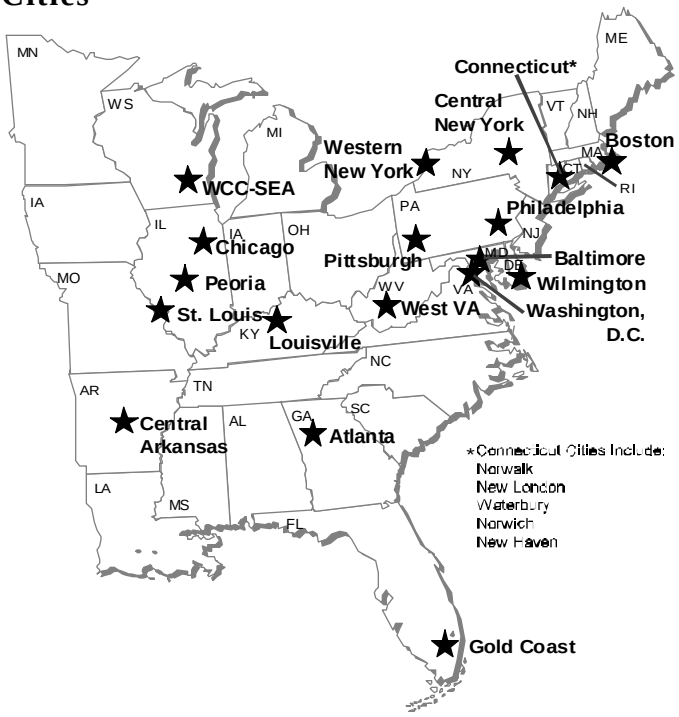
Behind every successful program lies a strategic plan. In this case, the Program Plan outlines the goals, organizational structure, and sets forth objectives to be achieved by the Clean Airports Program. The Program Plan is submitted to the Department of Energy/Baylor for approval prior to designation.

What is Clean Cities?

Clean Cities is a *locally-based* government/industry partnership, coordinated by the Department of Energy to expand the use of alternatives to traditional petroleum-based fuels. By combining local decision-making with the voluntary action of *partners*, the "grass-roots" approach of Clean Cities creates an effective plan, implemented at the local level, for creating a sustainable, nationwide alternative fuels market.

The Clean Cities program has created partnerships in 48 communities throughout the country. These "pioneer" Clean Cities feature approximately 30,000 operational alternative fuel vehicles (AFVs) which are helping to reduce oil consumption and tailpipe emissions. The nearly 2,000 member stakeholder organizations are committed to increasing vehicle acquisitions and infrastructure investments over the next five years.

Cities



How Does the Clean Airports Program Work?

The Clean Airports Program establishes local partnerships between stakeholders, including fixed base operators, university aviation programs, and flying clubs, which are committed to operating aircraft on alternative fuels. These grass roots partnerships work to solve local transportation and air quality problems. Clean Airports partners work directly with local businesses and governments to shepherd them through the goal-setting, coalition-building, and commitments process necessary to establish the foundations for an alternative fuels airport.

Current Aviation Fuels-

The Clean Airports Program targets small airports, aircraft owners, and pilots seeking alternatives to using current aviation gasoline, often referred to as avgas or 100LL. The high octane fuel used by small piston engine aircraft is produced in small quantities and sold at relatively high prices. Recent reports show that major oil companies are increasingly reluctant to produce avgas due to dwindling sales and special handling requirements.

One particular requirement, the elimination of tetraethyl lead from motor fuel, could severely affect the general aviation industry. Although avgas is currently exempt from this requirement, the Environmental Protection Agency and the California Air Resources Board have considered regulating the use of this fuel in order to reduce greenhouse gas emissions and eliminate hazardous air pollutants. In similar cases, evidence indicates that 100LL may disappear from the market altogether if the processing and handling requirements become prohibitive. Furthermore, the elimination of lead from avgas has a dire effect on the octane rating and performance of the fuel. Alternative fuels, such as ethanol, can replace leaded avgas while achieving high octane and performance levels. Vehicular and airborne traffic at airports emit high levels of air pollution and greenhouse gases. By adopting the

Clean Cities model, airports could make significant gains in the nation's efforts to diversify U.S. fuel consumption patterns and improve air quality by increasing the use of alternative fuels.

Alternative Aviation Fuels: A Clean, Economical Solution

In 1995, the *First International Conference on Alternative Aviation Fuels,* held in Waco, Texas, highlighted how fuels such as ethanol, ETBE (ethyl tertiary butyl ether), methanol, propane, natural gas, and biodiesel can be used as cost effective, cleaner burning alternative aviation fuels. For example, ethanol is currently being demonstrated on a widescale basis, and has received FAA certification for use in two series of aircraft engines.

Ethanol is a high octane alternative fuel that can be easily adopted for use in small aircraft. Engines can be modified to use ethanol with relatively minor adjustments. Not only are there numerous performance advantages with ethanol, including smoother operation, increased power, and superior resistance to knocking, but it also enjoys a relative cost advantage compared to avgas.

In comparisons of the current and projected prices of ethanol and avgas, studies show that the cost of operating an aircraft on ethanol will be considerably lower. In addition, since ethanol burns cleaner than petroleum-based fuels, there are also significant environmental benefits.

Other successful demonstrations, using natural gas and methanol, indicate a potential role for alternative fuels in airports around the country.